

CLAIMS - The invention is claimed as indicated below.

1. A workpiece processing station, comprising:
- a process fluid reservoir;
- a process bowl, said process bowl having a bowl bottom and bowl sides;
- a fluid cup disposed within said process bowl so as to form a first annular space between said fluid cup and said bowl sides, said fluid cup having a cup bottom and cup sides, said cup further comprising a fluid inlet disposed within said cup so as to admit fluid into said cup;
- an anode disposed within said cup such that said fluid inlet is between said cup bottom and said anode, said anode forming a second annular space between said anode and said cup sides;
- and
- wherein said bowl bottom is in fluid communication with said reservoir such that fluid rising within said cup may overflow about said first annular space into said fluid reservoir.

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16. A workpiece processing station, comprising:

a plurality of process bowls, each said process bowl having a bowl bottom and bowl sides;

a process fluid reservoir having a reservoir top, said reservoir top containing a plurality of openings for receiving each of said process bowls therein;

a plurality of fluid cups, an individual one of each said fluid cups being disposed within a corresponding individual one of each said process bowls, so as to form a first space between each said fluid cup and said each bowl sides, each said fluid cup having a cup bottom and cup sides, each said fluid cup further comprising a fluid inlet disposed within said cup so as to admit fluid into said cup, and

wherein each said bowl bottom is in fluid communication with said reservoir such that fluid rising within said cup may overflow about said first annular space into said fluid reservoir.

17. The apparatus of claim 16 further comprising, within each said fluid cup, an anode disposed within each said cup such that said fluid inlet is between said cup bottom and said anode, said anode forming a second space, said second space being between said anode and said cup sides.

1 32. Method for processing a workpiece in a semiconductor  
2 manufacturing process, comprising:

3 providing a process fluid from a process fluid reservoir;

4 presenting the portion of a workpiece to be processed to  
5 said process fluid such that said process fluid contacts said  
6 portion of workpiece to be processed;

7 processing said workpiece by contacting said portion of said  
8 workpiece to be processed for a predetermined length of time  
9 with a sufficient quantity of said process fluid such that a residual  
10 volume of said process fluid exists;

11 allowing said residual volume of said process fluid to drain  
12 by gravity into said process fluid reservoir.

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14 33. The method of claim 32 wherein said workpiece is presented  
15 to said process fluid in a horizontal position with said portion of said  
16 workpiece to be processed facing downward.

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18 34. The method of claim 33 wherein said portion of said  
19 workpiece to be processed is contacted with a fluid surface of said  
20 process fluid, and further wherein said process fluid is provided in a  
21 continuing flow such that said surface is in a quiescent state when  
22 contacted with said process fluid.  
23  
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1           35. The method of claim 34 wherein said fluid is an electrolytic  
2 solution, said workpiece is electrically conductive, and comprising the  
3 additional steps of:

4                 providing a metallic anode within said fluid;

5                 providing an electrical current to said workpiece so as to  
6 cause said workpiece to be electroplated.

7  
8           36. The method of claim 35 further comprising the step of  
9 spinning said workpiece about a vertical axis within said process fluid  
10 while providing said electric current.

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12           37. The method of claim 36 further comprising the step of  
13 maintaining a constant separation distance between said metallic anode  
14 and said workpiece while providing said electric current.

1           38. Method for processing a plurality of workpieces in a  
2 semiconductor manufacturing process, comprising:

3           presenting the portion of each workpiece to be processed  
4 to a dedicated continually flowing pool of process fluid such that  
5 said process fluid contacts said portion of workpiece to be  
6 processed;

7           processing each said workpiece by contacting said portion of  
8 each said workpiece to be processed for a predetermined length  
9 of time with a sufficient volume of said process fluid such that  
10 each said continually flowing pool of said process fluid overflows  
11 with process fluid during said processing;

12           allowing said overflowing process fluid to drain by gravity  
13 into a common process fluid reservoir.

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15           39. The method of claim 38 further comprising the step of  
16 controlling the flow of process fluid to each said continually flowing  
17 pool of process fluid to maintain a predetermined liquid level in said  
18 pool.